

(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 162 282 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
12.11.2003 Bulletin 2003/46

(51) Int Cl.7: C22C 14/00, C22F 1/18

(43) Date of publication A2:
12.12.2001 Bulletin 2001/50

(21) Application number: 01113184.4

(22) Date of filing: 30.05.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

• SUPER MATERIAL APPLICATION LAB.
HAMAMATSU-CITY, SHIZUOKA (JP)

(72) Inventor: Matsuo, Aritsune
Hamamatsu-city, Shizuoka (JP)

(30) Priority: 05.06.2000 JP 2000167642

(74) Representative:
Blumbach, Kramer & Partner GbR
Radeckestrasse 43
81245 München (DE)

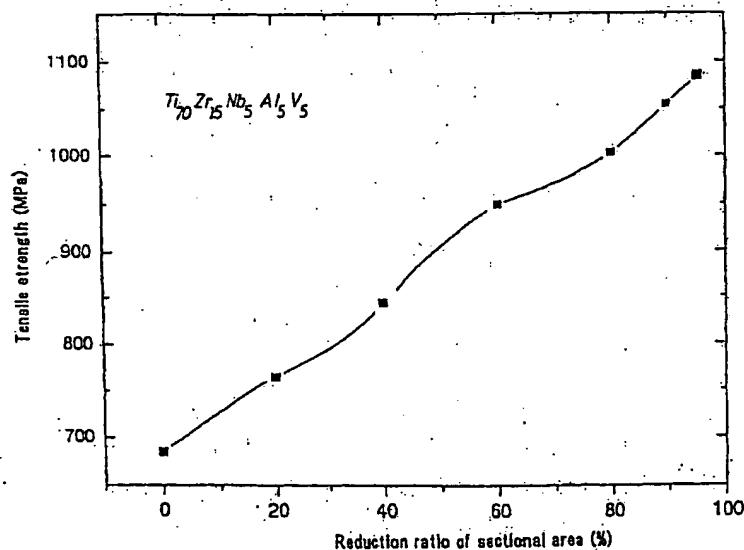
(71) Applicants:
• NIKKIN MATERIAL INC.
SABAE-CITY, FUKUI (JP)

(54) Titanium alloy

(57) A titanium alloy having a composition represented by the chemical formula $Ti_{100-x}M1_x$, wherein M1 is at least one element selected from the group consisting of Zr, Hf, Nb, Ta and V, x is atomic % or the sum of atomic % of the element(s), and x is 20 to 80 atomic %; and a titanium alloy having a composition represented by the chemical formula $Ti_{100-x-y}M1_xM2_y$, wherein M1 is

at least one element selected from the group consisting of Zr, Hf, Nb, Ta and V, x is atomic % or the sum of atomic % of the element(s), M2 is at least one element selected from the group consisting of Al, Sn, Mo, Cr, Ag, Au, Pd, Pt, Ni, Co, Fe, Si, Mn, B, Mg, Sc, Y, La, Ce, Pr, Nd and Sm, y is atomic % or the sum of atomic % of the element(s), and the sum of x and y is 20 to 80 atomic %.

Fig. 1



EP 1 162 282 A3



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 01 11 3184
shall be considered, for the purposes of subsequent
proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	I.J. POLMEAR: "Light Alloys" 1989, EDWARD ARNOLD, GREAT BRITAIN XP002254245 034049 * page 215 *	1,3-9	C22C14/00 C22F1/18
X	DE 23 20 107 A (HITACHI LTD) 24 January 1974 (1974-01-24) * tables 1-4 *	1-9	
X	US 4 952 236 A (GUSTAVSON LARRY J ET AL) 28 August 1990 (1990-08-28) * table IX *	1,3-9	
X	PATENT ABSTRACTS OF JAPAN vol. 015, no. 197 (C-0833), 21 May 1991 (1991-05-21) & JP 03 053037 A (SUMITOMO METAL IND LTD), 7 March 1991 (1991-03-07) * abstract; table 1 *	1,3,5-9	
X	US 3 226 951 A (DE MALLIE HOWARD R ET AL) 4 January 1966 (1966-01-04) * table 2 *	1,3,5-9	TECHNICAL FIELDS SEARCHED (Int.Cl.7) C22C C22F
INCOMPLETE SEARCH <p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPO to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.</p> <p>Claims searched completely:</p> <p>Claims searched incompletely:</p> <p>Claims not searched:</p> <p>Reason for the limitation of the search: see sheet C</p>			
Place of search MUNICH		Date of completion of the search 11 September 2003	Examiner Brown, A
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document	

EPO FORM 1503 (03.02.02) (P/04/007)

BEST AVAILABLE COPY

European Patent
OfficeINCOMPLETE SEARCH
SHEET CApplication Number
EP 01 11 3184

Claim(s) searched completely:

2

Claim(s) searched incompletely:

1, 3-13

Reason for the limitation of the search:

Present claim 1 relates to an extremely large number of possible alloys. Support within the meaning of Article 84 EPC is to be found, however, for only a very small proportion of the alloys claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the alloying elements disclosed in Table 1 of the application.

BEST AVAILABLE COPY

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 11 3184

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-09-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 2320107	A	24-01-1974	JP 869554 C	13-07-1977
			JP 49004493 A	16-01-1974
			JP 51044880 B	01-12-1976
			DE 2320107 A1	24-01-1974

US 4952236	A	28-08-1990	US 4857269 A	15-08-1989
			AT 85816 T	15-03-1993
			CA 1331527 C	23-08-1994
			DE 68904941 D1	25-03-1993
			DE 68904941 T2	03-06-1993
			EP 0359446 A1	21-03-1990
			ES 2037956 T3	01-07-1993
			IE 64539 B1	23-08-1995
			JP 2060008 C	10-06-1996
			JP 2107734 A	19-04-1990
			JP 7084634 B	13-09-1995
			ZA 8906877 A	24-04-1991

JP 03053037	A	07-03-1991	NONE	

US 3226951	A	04-01-1966	NONE	

EPO FORM P0468

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

BEST AVAILABLE COPY